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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/020,561

12/07/2001

Joachim Schroeder

LO25-009

8595

21567

7590

02/02/2004

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EXAMINER

FULLER, RODNEY EVAN

ART UNIT

PAPER NUMBER

2851

DATE MAILED: 02/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/020,561

Applicant(s)

SCHROEDER ET AL.

Examiner

Rodney E Fuller

Art Unit

2851

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 17 and 20-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 17 and 20-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 10, 2003 has been entered.

Remarks

2. In response to applicant's Amendment, dated November 10, 2004, the examiner acknowledges the addition of claims 20-31 and the cancellation of claims 11-16 and 18-19. Claims 1-10, 17 and 20-31 are pending.

3. The applicant makes the argument that the "art of record fails to teach or suggest the at least two inert gases are devoid of oxygen." (Emphasis added) Further, the applicant makes the argument that "the embodiments disclosed by Komoriya always includes oxygen." (Emphasis added) The examiner notes that Komoriya states in column 6, line 63 – column 7, line 19 that:

"In the foregoing description, the nitrogen and oxygen were used to adjust the refractive index. In addition to nitrogen and oxygen, however, use can be made of carbon dioxide gas, water vapor, helium, neon, argon, and the like, to adjust the refractive index. Table 1 shows refractive indexes and densities of these gases. Gases having large refractive indexes and small refractive indexes relative to air (refractive index, 1.000292) should be selected and used in combination to adjust the refractive index."

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Thus, the examiner maintains that Komoriya does not require the use of oxygen in all cases, but may utilize carbon dioxide gas, water vapor, helium, neon, argon and the like.

4. Regarding claims 7 and 8, the applicant makes the argument that Komoriya does not disclose the use of krypton or xenon. In the prior Office Action, dated July 8, 2003, the examiner acknowledged that Komoriya does not explicitly state that krypton and xenon are used as the inert gas. However, the examiner maintains, as stated in the prior Office Action, that the selection of these known equivalents (i.e., inert gases) would be within the level of ordinary skill in the art. Likewise, the examiner maintains the rejections associated with claims 9, 10 and 17 set forth in the prior Office Action.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3-6, 17 and 20-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Komoriya, et al. (US 5,025,284).

Regarding claims 1, 20-22, 24-30 Komoriya discloses "...flushing at least one closed internal space of an objective (Fig. 7, ref.# 9), the flushing being performed by mixing at least two inert gasses (column 5, lines 54-55, i.e., oxygen & nitrogen) in such a way that the refractive index resulting therefrom corresponds at least approximately to

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the refractive index of air (column 6, lines 28-36); and wherein the at least two inert gases are devoid of oxygen.” (column 6, line 63 – column 7, line 19)

Regarding claims 3, Komoriya discloses “...wherein the objective is provided as an exposure projection objective for semiconductor lithography.” (column 1, line 19)

Regarding claim 4, Komoriya discloses “...wherein in the case of use of two inert flushing gasses the refractive index of one flushing gas is above that of air, and the refractive index of the second flushing gas is below that of air.” (See table 1 and column 5, lines 54-55, i.e., oxygen & nitrogen)

Regarding claim 5, Komoriya discloses “...wherein nitrogen is used as the first flushing gas, and an inert gas is used as second flushing gas. (column 5, lines 54-55 and column 6, lines 64-66)

Regarding claim 6, Komoriya discloses “...wherein helium is used an inert gas.” (column 6, line 65)

Regarding claims 17, 23 and 31, Komoriya discloses “wherein the at least two inert gases comprises only inert gases.” (column 6, line 63 – column 7, line 19)

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 2 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komoriya, et al. (US 5,025,284).

Regarding claim 2, Komoriya implies that the gases are mixed in a ratio close to that of air in column 6, lines 22-36. However, Komoriya does not explicitly disclose "...wherein air or synthetic air having 78-80% nitrogen (N₂) by volume and 20-22% oxygen (O₂) by volume is provided." However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to select the mixture ratio of gasses as claimed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105, USPQ 233.

Regarding claims 7 and 8, Komoriya discloses that "in addition to nitrogen and oxygen" "use can be made of carbon dioxide gas, water vapor, helium, neon, argon, and the like, to adjust the refractive index." (column 6, lines 64-66; emphasis added) However, Komoriya does not explicitly state that "krypton is used as inert gas" (claim 7) or that "xenon is used as inert gas" (claim 8). As noted in Matsumoto (US 6,411,368) (column 38, lines 29-30), the inert gases include helium, neon, argon, krypton, xenon, and radon. Thus, the selection of any of these known equivalents (i.e., inert gases) would be within the level of ordinary skill in the art.

Regarding claims 9 and 10, Komoriya does not explicitly disclose "wherein nitrogen in a volumetric fraction of 95 to 99.5% and helium in a volumetric fraction of 0.5 to 5% are used" (claim 9) or "wherein helium in a volumetric fraction of 1.1 to 1.3, preferably 1.2% is used" (claim 10). However, it would have been obvious to

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one having ordinary skill in the art at the time the invention was made to select the mixture ratio of gasses as claimed, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105, USPQ 233.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Murayama, et al. (US 6,341,006), Aoki, et al. (US 6,614,504) and Ishikawa (US 6,628,371) each disclose that nitrogen, helium, krypton and xenon may be utilized in the flushing the internal space of an objective. (emphasis added)

Ishii (US 6,646,713) discloses that nitrogen, helium may be utilized in the flushing the internal space of an objective.

Note: Murayama (US 6,341,006) and Ishii (US 6,646,713) utilize gases to flush the internal space of an objective wherein the gases are devoid of oxygen. (emphasis added)

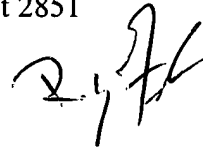
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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney E Fuller whose telephone number is 703-306-5641. The examiner can normally be reached on 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 703-308-1436. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Rodney E Fuller
Primary Examiner
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A handwritten signature in black ink, appearing to read 'R. E. Fuller', is written over the printed name of the examiner.

January 22, 2004